Honeywell

ST 3000 Smart Transmitter

Series 900 Gauge Pressure Models

STG944	0 to 500 psi	0 to 35 bar
STG94L	0 to 500 psi	0 to 35 bar
STG974	0 to 3000 psi	0 to 210 bar
STG97L	0 to 3000 psi	0 to 210 bar
STG98L	0 to 6000 psi	0 to 415 bar
STG99L	0 to 10000 psi	0 to 690 bar

34-ST-03-67
10/04

Specification and Model Selection Guide

Introduction

In 1983, Honeywell introduced the first Smart Pressure Transmitter— the ST 3000®. In 1989, Honeywell launched the first all digital, bi-directional protocol for smart field devices. Today, its ST 3000 Series 900 In-line, Gauge Pressure Transmitters continue to bring proven “smart” technology to a wide spectrum of pressure measurement applications. Typical applications include high-pressure measurement in boilers, fuel feeds, and high-pressure reaction vessels in the petrochemical and hydrocarbon recovery industries – any location where accuracy and reliability are crucial to safe, economical operation. As with the rest of the line of Honeywell transmitters, the in-line transmitters offer the ability to be installed in a wide variety of hazardous environments for accurate repeatable pressure measurement.

All ST 3000 transmitters can provide a 4-20 mA output, Honeywell Digitally Enhanced (DE) output, HART* output, or FOUNDATION™ Fieldbus output. When digitally integrated with Honeywell’s Process Knowledge System™, EXPERION PKS™, ST 3000 instruments provide a more accurate process variable as well as advanced diagnostics.

Honeywell’s cost-effective ST 3000 S900 transmitters lead the industry in reliability and stability:

- Stability = +/-0.01% per year
- Reliability = 470 years MTBF

Figure 1—Series 900 Gauge Pressure Transmitters feature proven piezoresistive sensor technology.

The devices provide comprehensive self-diagnostics to help users maintain high uptime, meet regulatory requirements, and attain high quality standards. S900 transmitters allow smart performance at analog prices. Accurate, reliable and stable, Series 900 transmitters offer greater turndown ratio than conventional transmitters.

"Honeywell transmitters operating in the digital mode using Honeywell's Digitally Enhanced (DE) protocol make diagnostics available right at the control system's human interface. Equally important, transmitter status information is continuously displayed to alert the operator immediately of a fault condition. Because the process variable (PV) status transmission precedes the PV value, we are guaranteed that a bad PV is not used in a control algorithm. In addition, bi-directional communication provides for remote transmitter configuration directly from the human interface, enabling management of the complete loop.”

Maureen Atchison, DuPont
Site Electrical & Instrumentation Leader

Description

The ST 3000 transmitter can replace any 4 to 20 mA output transmitter in use today and operates over a standard two-wire system.

The measuring means is a piezoresistive sensor, which actually contains three sensors in one. It contains a differential pressure sensor, a temperature sensor, and a static pressure sensor.

Microprocessor-based electronics provide higher span-turndown ratio, improved temperature and pressure compensation, and improved accuracy.

The transmitter's meter body and electronics housing resist shock, vibration, corrosion, and moisture. The electronics housing contains a compartment for the single-board electronics, which is isolated from an integral junction box. The single-board electronics is replaceable and interchangeable with any other ST 3000 Series 100 or Series 900 model transmitter.

Like other Honeywell transmitters, the ST 3000 features two-way communication between the operator and the transmitter through our Smart Field Configurator (SFC). You can connect the SFC anywhere that you can access the transmitter signal lines.

The SCT 3000 Smartline® Configuration Toolkit provides an easy way to configure instruments using a personal computer. The toolkit enables configuration of devices before shipping or installation. The SCT 3000 can operate in the offline mode to configure an unlimited number of devices. The database can then be loaded downline during commissioning.

Features

- Choice of linear or square root output conformity is a simple configuration selection.
- Direct digital integration with Experion PKS and other control systems provides local measurement accuracy to the system level without adding typical A/D and D/A converter inaccuracies.
- Unique piezoresistive sensor automatically compensates input for temperature and static pressure.Added "smart" features include configuring lower and upper range values, simulating accurate analog output, and selecting preprogrammed engineering units for display.
- Smart transmitter capabilities with local or remote interfacing means significant manpower efficiency improvements in commissioning, start-up, and ongoing maintenance functions.

Specifications

Operating Conditions – All Models

Parameter	Reference Condition (at zero static)		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature	25 ±1	77 ±2	-40 to 70	-40 to 158	-40 to 85	-40 to 185	-55 to 125	-67 to 257
Meter Body Temperature	25 ±1	77 ±2	-40 to 110*	-40 to 230*	-40 to 125**	-40 to 257**	-55 to 125	-67 to 257
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Vacuum Region - Minimum Pressure **mmHg absolute** **inH$_2$O absolute**	 atmospheric atmospheric		 25 13		 2 (short term ***) 1 (short term ***)			
Supply Voltage, Current, and Load Resistance	**Voltage Range:** 10.8 to 42.4 Vdc at terminals **Current Range:** 3.0 to 21.8 mA **Load Resistance:** 0 to 1440 ohms (as shown in Figure 2)							
Maximum Allowable Working Pressure (MAWP) (ST 3000 products are rated to Maximum Allowable Working Pressure)	STG944 and STG94L = 500 psi , 35 bar STG974 and STG97L = 3000 psi, 210 bar STG98L = 6000 psi, 415 bar STG99L = 10,000 psi, 690 bar Units can withstand overpressure of 1.5X MAWP without damage.							

* For model 944 with CTFE fill fluid, the rating is –15 to 70°C (5 to 158°F); for model 98L with CTFE fill fluid, the rating is –15 to 110°C (5 to 230°F).

** For Models STG94L, STG97L, and STG98L, STG99L the upper limit is 110°C (230°F).

*** Short term equals 2 hours at 70°C (158 °F)

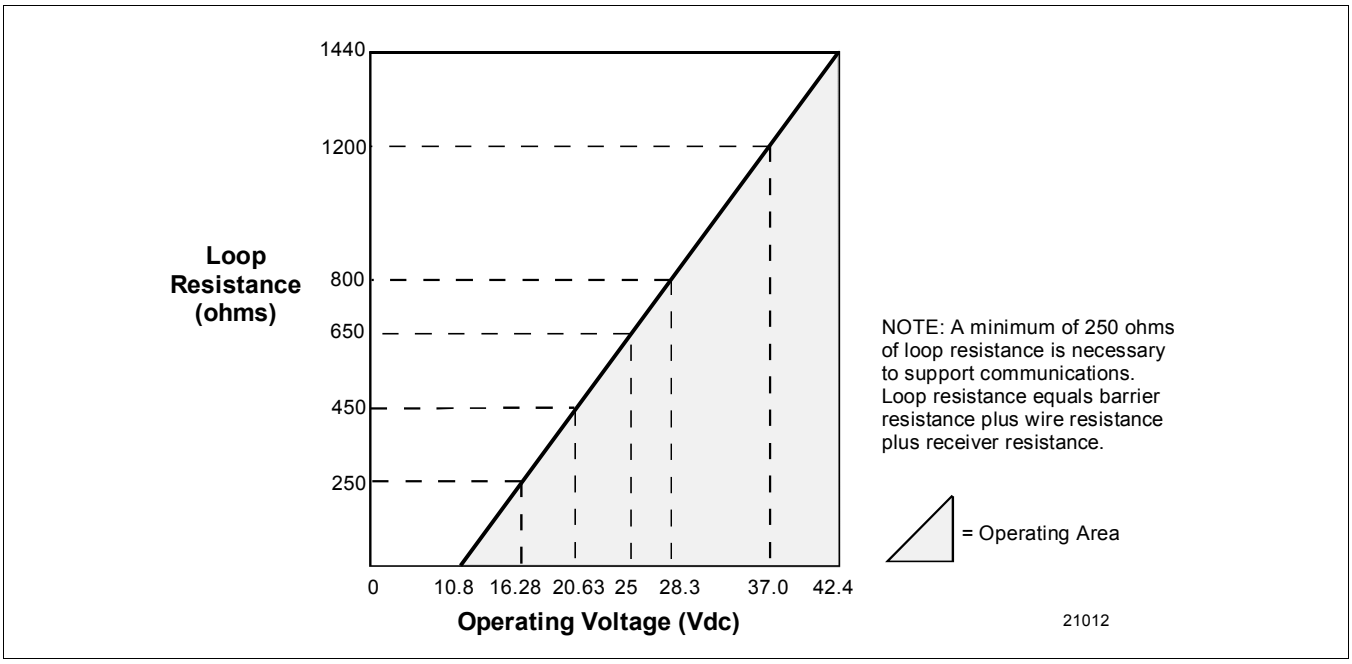

Figure 2—Supply voltage and loop resistance chart.

Performance Under Rated Conditions* - Models STG944 & 94L (0 to 500 psi/35 bar)

Parameter		Description
Upper Range Limit	**psi** **bar**	500 35
Minimum Span	**psi** **bar**	20 1.4
Turndown Ratio		25 to 1
Zero Elevation and Suppression		No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*		**In Analog Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals: $\pm 0.025 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.025 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.0625% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals: $\pm 0.0125 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.0125 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}}\right)$ in % span
Zero Temperature Effect per 28°C (50°F)		**In Analog Mode:** ±0.1625% of span. For URV below reference point (50 psi), effect equals: $\pm 0.0125 + 0.15 \left(\frac{50 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.0125 + 0.15 \left(\frac{3.5 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.15% of span. For URV below reference point (50 psi), effect equals: $\pm 0.15 \left(\frac{50 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.15 \left(\frac{3.5 \text{ bar}}{\text{span bar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F)		**In Analog Mode:** ±0.25% of span. For URV below reference point (50 psi), effect equals: $\pm 0.10 + 0.15 \left(\frac{50 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.10 + 0.15 \left(\frac{3.5 \text{ bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.225% of span. For URV below reference point (50 psi), effect equals: $\pm 0.075 + 0.15 \left(\frac{50 \text{ psi}}{\text{span psi}}\right)$ or $\pm 0.075 + 0.15 \left(\frac{3.5 \text{ bar}}{\text{span bar}}\right)$ in % span
Stability		±0.015% of URL per year

* Performance specifications are based on reference conditions of 25°C (77°F), 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Models STG974 & 97L (0 to 3000 psi/210 bar)

Parameter		Description
Upper Range Limit	**psi** **bar**	3000 210
Minimum Span	**psi** **bar**	300 21
Turndown Ratio		10 to 1
Zero Elevation and Suppression		No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*		**In Analog Mode:** ±0.10% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (750 psi), accuracy equals: $\pm 0.05 + 0.05 \left(\frac{750\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.05 + 0.05 \left(\frac{52\ \text{bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (300 psi), accuracy equals: $\pm 0.025 + 0.05 \left(\frac{750\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.025 + 0.05 \left(\frac{52\ \text{bar}}{\text{span bar}}\right)$ in % span
Zero Temperature Effect per 28°C (50°F)		**In Analog Mode:** ±0.2125% of span. For URV below reference point (500 psi), effect equals: $\pm 0.0125 + 0.20 \left(\frac{500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.0125 + 0.20 \left(\frac{35\ \text{bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.20% of span. For URV below reference point (500 psi), effect equals: $\pm 0.20 \left(\frac{500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.20 \left(\frac{35\ \text{bar}}{\text{span bar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F)		**In Analog Mode:** ±0.325% of span. For URV below reference point (500 psi), effect equals: $\pm 0.125 + 0.20 \left(\frac{500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.125 + 0.20 \left(\frac{35\ \text{bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.30% of span. For URV below reference point (500 psi), effect equals: $\pm 0.10 + 0.20 \left(\frac{500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.10 + 0.20 \left(\frac{35\ \text{bar}}{\text{span bar}}\right)$ in % span
Stability		±0.03% of URL per year

* Performance specifications are based on reference conditions of 25°C (77°F), 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Model STG98L (0 to 6000 psi/415 bar)

Parameter		Description
Upper Range Limit	**psi** **bar**	6000 415
Minimum Span	**psi** **bar**	500 35
Turndown Ratio		12 to 1
Zero Elevation and Suppression		No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*		**In Analog Mode:** ±0.10% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (1500 psi), accuracy equals: $\pm 0.05 + 0.05 \left(\frac{1500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.05 + 0.05 \left(\frac{104\ \text{bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (1500 psi), accuracy equals: $\pm 0.025 + 0.05 \left(\frac{1500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.025 + 0.05 \left(\frac{104\ \text{bar}}{\text{span bar}}\right)$ in % span
Zero Temperature Effect per 28°C (50°F)		**In Analog Mode:** ±0.2125% of span. For URV below reference point (1500 psi), effect equals: $\pm 0.0125 + 0.20 \left(\frac{1500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.0125 + 0.20 \left(\frac{104\ \text{bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.20% of span. For URV below reference point (1500 psi), effect equals: $\pm 0.20 \left(\frac{1500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.20 \left(\frac{70\ \text{bar}}{\text{span bar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F)		**In Analog Mode:** ±0.325% of span. For URV below reference point (1500 psi), effect equals: $\pm 0.125 + 0.20 \left(\frac{1500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.125 + 0.20 \left(\frac{104\ \text{bar}}{\text{span bar}}\right)$ in % span **In Digital Mode:** ±0.30% of span. For URV below reference point (1500 psi), effect equals: $\pm 0.10 + 0.20 \left(\frac{1500\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.10 + 0.20 \left(\frac{104\ \text{bar}}{\text{span bar}}\right)$ in % span
Stability		±0.03% of URL per year

* Performance specifications are based on reference conditions of 25°C (77°F), 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Model STG99L (0 to 10000 psi/690 bar)

Parameter		Description
Upper Range Limit	**psi** **bar**	10000 690
Minimum Span	**psi** **bar**	500 35
Turndown Ratio		20 to 1
Zero Elevation and Suppression		No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*		**In Analog Mode:** ±0.10% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (2500 psi), accuracy equals: $\pm 0.05 + 0.05 \left(\frac{2500 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.05 + 0.05 \left(\frac{172 \text{ bar}}{\text{span bar}} \right)$ in % span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (2500 psi), accuracy equals: $\pm 0.025 + 0.05 \left(\frac{2500 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.025 + 0.05 \left(\frac{172 \text{ bar}}{\text{span bar}} \right)$ in % span
Zero Temperature Effect per 28°C (50°F)		**In Analog Mode:** ±0.2125% of span. For URV below reference point (2500 psi), effect equals: $\pm 0.0125 + 0.20 \left(\frac{2500 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.0125 + 0.20 \left(\frac{172 \text{ bar}}{\text{span bar}} \right)$ in % span **In Digital Mode:** ±0.20% of span. For URV below reference point (2500 psi), effect equals: $\pm 0.20 \left(\frac{2500 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.20 \left(\frac{172 \text{ bar}}{\text{span bar}} \right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F)		**In Analog Mode:** ±0.325% of span. For URV below reference point (2500 psi), effect equals: $\pm 0.125 + 0.20 \left(\frac{2500 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.125 + 0.20 \left(\frac{172 \text{ bar}}{\text{span bar}} \right)$ in % span **In Digital Mode:** ±0.30% of span. For URV below reference point (2500 psi), effect equals: $\pm 0.10 + 0.20 \left(\frac{2500 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.10 + 0.20 \left(\frac{172 \text{ bar}}{\text{span bar}} \right)$ in % span
Stability		±0.03% of URL per year

* Performance specifications are based on reference conditions of 25°C (77°F), 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions - General for all Models

Parameter	Description
Output (two-wire)	Analog 4 to 20 mA or DE digital communications mode. Options available for FOUNDATION Fieldbus and HART protocol.
Supply Voltage Effect	0.005% span per volt.
Damping Time Constant	Adjustable from 0 to 32 seconds digital damping.
CE Conformity (Europe)	89/336/EEC, Electromagnetic Compatibility (EMC) Directive.
Lightning Protection Option (Code "LP")	Leakage Current: 10 microamps max. @ 42.4 VDC, 93°C Impulse Rating: 10/20 µ sec. 5,000 Amps (50 strikes) 10,000 Amps (20 strikes) (rise/decay) 10/1000 µ sec. 250 Amps (1000 strikes) 500 Amps (400 strikes)

Physical and Approval Bodies

Parameter	Description
Barrier Diaphragms Material	**Dual-Head Meter Body:** 316L SS, Hastelloy C-276 **In-Line Meter Body:** 316L SS, Hastelloy C-276
Process Head Material	**Dual-Head Meter Body:** 316 SS, Carbon Steel (zinc-plated), Hastelloy. [Reference head is Carbon Steel (zinc-plated).] **In-Line Meter Body:** 316 SS process interface.
Head Gaskets	Teflon is standard. Viton is available.
Meter Body Bolting	Carbon Steel (Zinc plated) standard. Options include 316 SS, NACE A286 SS bolts and 304 SS nuts and B7M. 316 SS (NACE) bolts for adapters (standard option).
Mounting Bracket	Carbon Steel (Zinc-plated) or Stainless Steel angle bracket or Carbon Steel flat bracket available.
Fill Fluid	Silicone oil or CTFE (Chlorotrifluoroethylene)
Electronic Housing	Epoxy-Polyester hybrid paint. Low Copper-Aluminum. Meets NEMA 4X (watertight) and NEMA 7 (explosion proof). Stainless steel optional.
Process Connections	**Dual-Head Meter Body:** 1/4-inch NPT; 1/2-inch NPT with adapter or DIN, standard option. **In-Line Meter Body:** 1/2-inch NPT
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe. See Figure 3 for dual-head models, and Figure 4 for in-line models.
Dimensions	See Figures 5 and 6.
Net Weight	**With Dual-Head Meter Body:** 9 pounds (4.1 Kg) **With In-Line Meter Body:** 3.8 pounds (1.7 Kg)
Approval Bodies - **Hazardous Areas** - **Canadian Registration Number (CRN)**	- Approved as explosion proof and intrinsically safe for use in Class I, Division 1, Groups A, B, C, D locations, and nonincendive for Class I, Division 2, Groups A, B, C, D locations. Approved EEx ia IIC T4, T5, T6 and EEx d IIC T5, T6 per ATEX standards. See attached Model Selection Guide for options. - All ST 3000 model designs, except STG19L, STG99L, STG170, STG180, have been registered in all provinces and territories in Canada and are marked CRN: 0F8914.5C.

Pressure Equipment Directive (97/23/EC)	The ST 3000 pressure transmitters listed in this Specification have no pressurized internal volume or have a pressurized internal volume rated less than 1,000 bar (14,500 psig) and/or have a maximum volume of less than 0.1 liter. Therefore, these transmitters are either; not subject to the essential requirements of the directive 97/23/EC (PED, Annex 1) and shall not have the CE mark, or the manufacturer has the free choice of a module when the CE mark is required for pressures > 200 bar (2,900 psig).

NOTE: Pressure transmitters that are part of safety equipment for the protection of piping (systems) or vessel(s) from exceeding allowable pressure limits, (equipment with safety functions in accordance with Pressure Equipment Directive 97/23/EC article 1, 2.1.3), require separate examination.

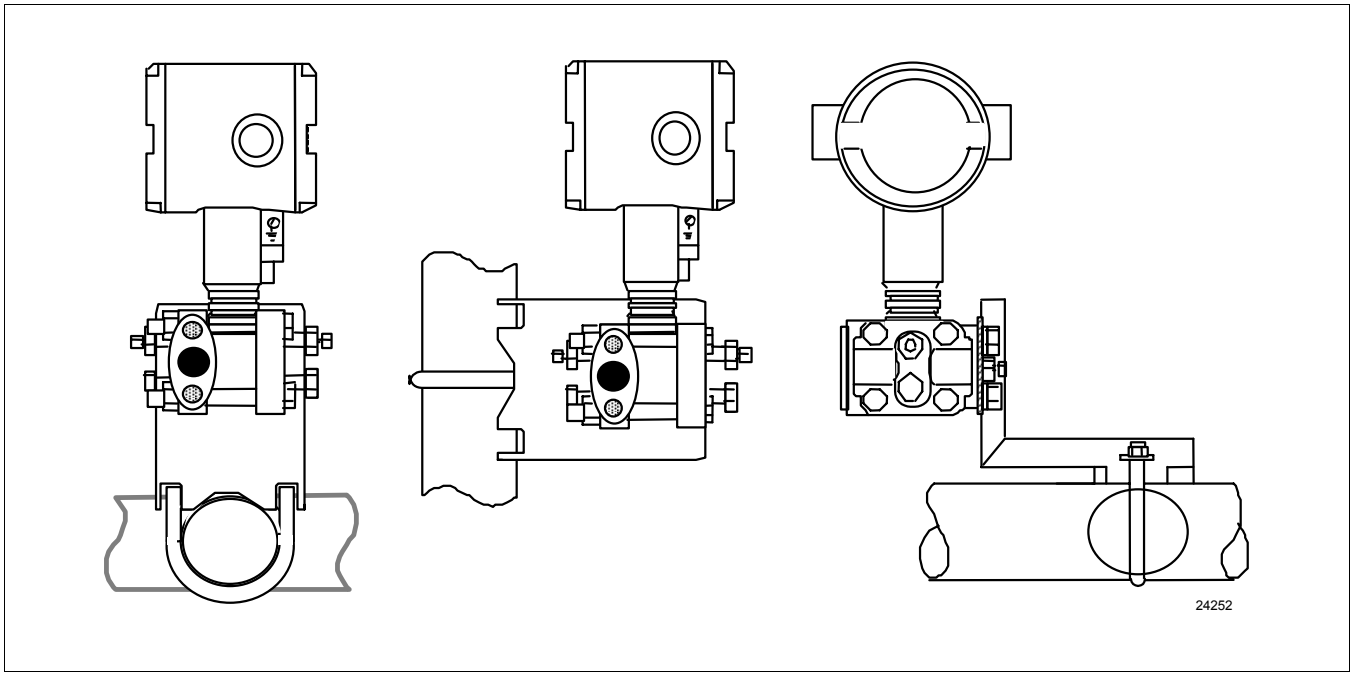

Figure 3—Examples of typical mounting positions for dual-head models STG944 and STG974

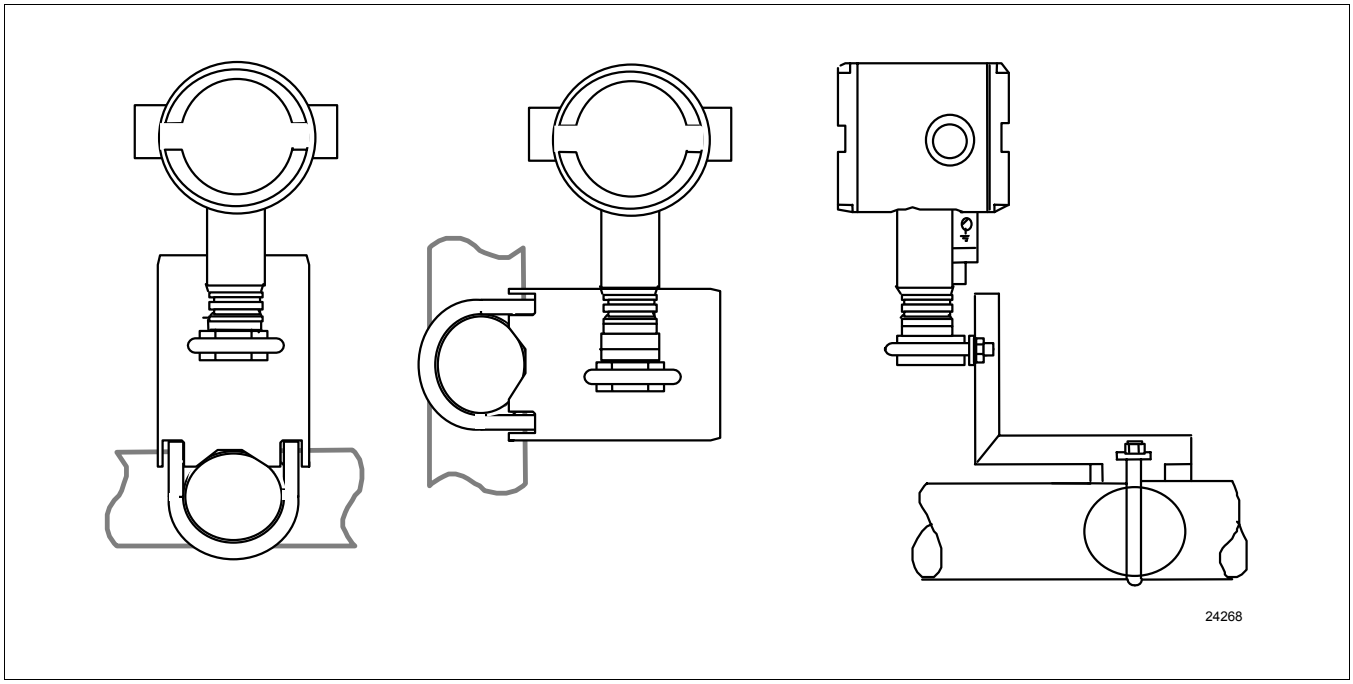

Figure 4—Examples of typical mounting positions for in-line models STG94L, STG97L, STG98L, and STG99L. Note that a mounting bracket is not required for in-line models.

Reference Dimensions: millimeters / inches

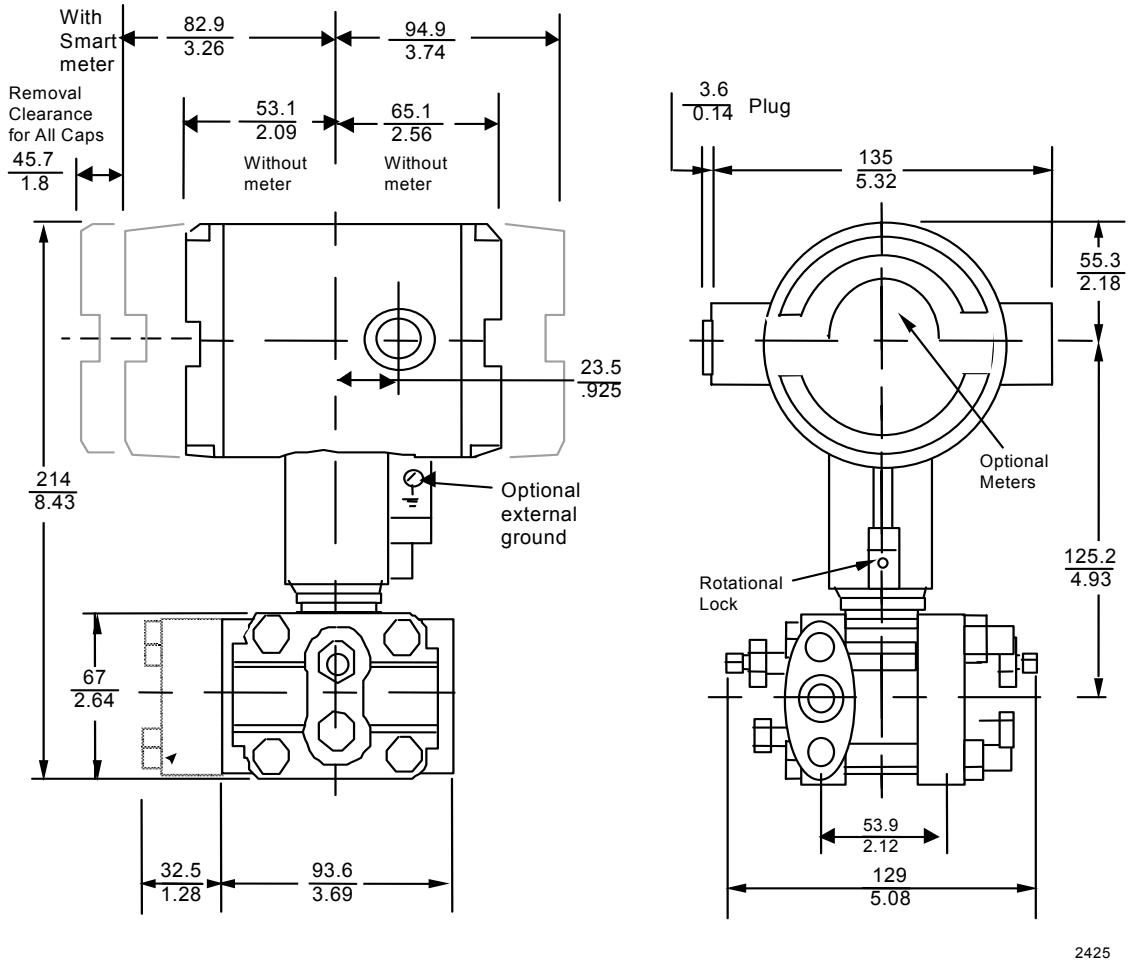

Figure 5—Typical mounting dimensions for dual-head models STG944 and STG974 for reference

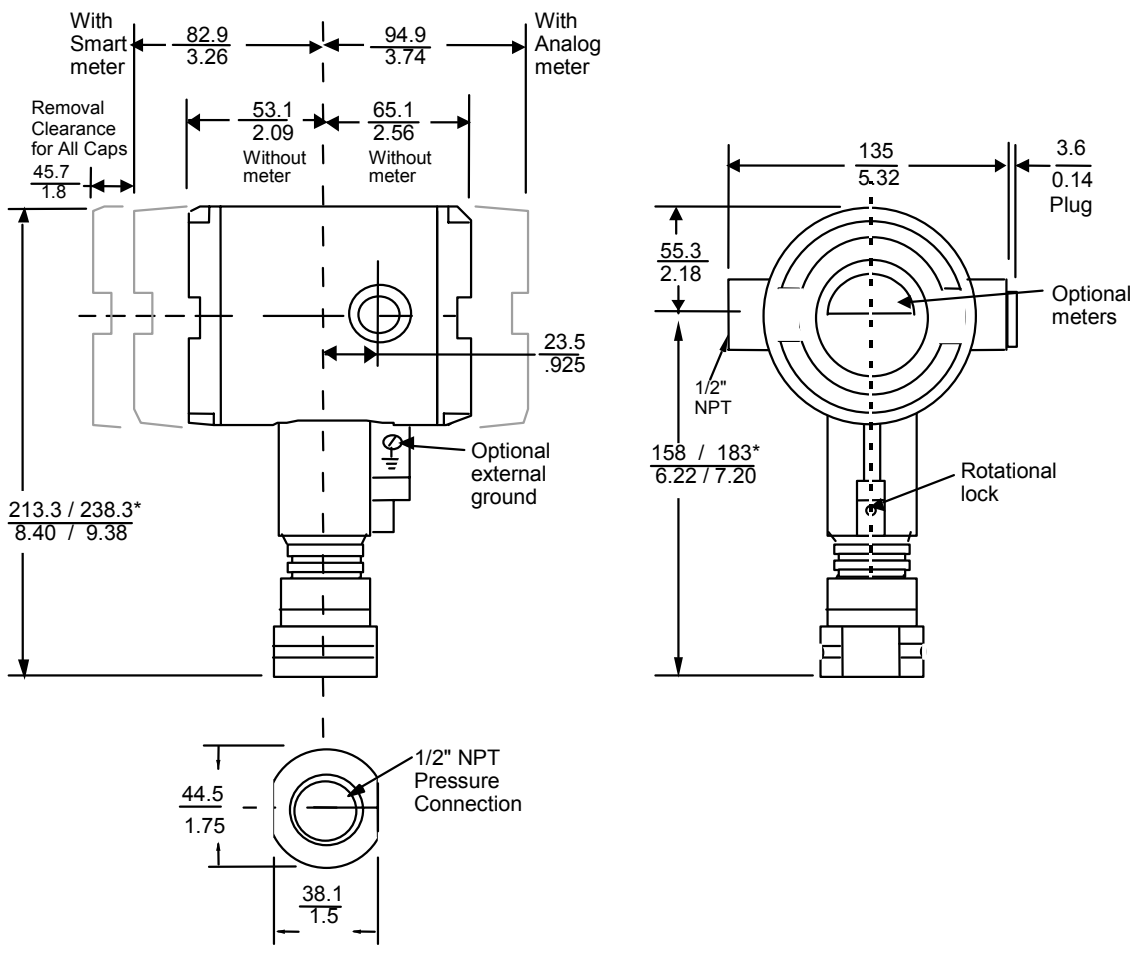

Figure 6—Typical mounting dimensions for in-line models STG94L, STG97L, STG98L, and STG99L for reference

Options

Mounting Bracket
The angle mounting bracket is available in either zinc-plated carbon steel or stainless steel and is suitable for horizontal or vertical mounting on a two inch (50 millimeter) pipe, as well as wall mounting. An optional flat mounting bracket is also available in carbon steel for two inch (50 millimeter) pipe mounting.

Indicating Meter (ME and SM Options)
Two integral meter options are available. An analog meter (option ME) is available with a 0 to 100% linear scale. The Smart Meter (option SM) provides an LCD display for both analog and digital output and can be configured to display pressure in pre-selected engineering units.

Lightning Protection (Option LP)
A terminal block is available with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes.

HART Protocol Compatibility (Option HC)
An optional electronics module is available for the ST 3000 that provides HART Protocol compatibility. Transmitters with the HART Option are compatible with the AMS System. (Contact your AMS Supplier if an upgrade is required.)

Indicator Configuration (Option CI)
Provides custom configuration of Smart Meters

Tagging (Option TG)
Up to 30 characters can be added on the stainless steel nameplate mounted on the transmitter's electronics housing at no extra cost. Note that a separate nameplate on the meter body contains the serial number and body-related data. A stainless steel wired on tag with additional data of up to 4 lines of 28 characters is also available. The number of characters for tagging includes spaces.

Transmitter Configuration (Option TC)
The factory can configure the transmitter linear/square root extraction, damping time, LRV, URV and mode (analog/digital) and enter an ID tag of up to eight characters and scratchpad information as specified.

Custom Calibration and ID in Memory (Option CC)
The factory can calibrate any range within the scope of the transmitter's range and enter an ID tag of up to eight characters in the transmitter's memory.

FOUNDATION Fieldbus (Option FF)
Equips transmitter with FF protocol for use in 31.25 kbit/s FF networks. See document 34-ST-03-72 for additional information on ST 3000 Fieldbus transmitters.

Ordering Information

Contact your nearest Honeywell sales office, or

In the U.S.:
Honeywell
Industrial Automation & Control
16404 North Black Canyon Hwy.
Phoenix, AZ 85053
1-800-288-7491

In Canada:
The Honeywell Centre
155 Gordon Baker Rd.
North York, Ontario M2H 3N7
1-800-461-0013

In Latin America:
Honeywell Inc.
480 Sawgrass Corporate Parkway,
Suite 200
Sunrise, FL 33325
(954) 845-2600

In Europe and Africa:
Honeywell S. A.
Avenue du Bourget 1
1140 Brussels, Belgium

In Eastern Europe:
Honeywell Praha,
s.r.o. Budejovicka 1
140 21 Prague 4,
Czech Republic

In the Middle East:
Honeywell Middle East Ltd.
Khalifa Street,
Sheikh Faisal Building
Abu Dhabi, U. A. E.

In Asia:
Honeywell Asia Pacific Inc.
Honeywell Building,
17 Changi Business Park Central 1
Singapore 486073
Republic of Singapore

In the Pacific:
Honeywell Pty Ltd.
5 Thomas Holt Drive
North Ryde NSW Australia 2113
(61 2) 9353 7000

In Japan:
Honeywell K.K.
14-6 Shibaura 1-chrome
Minato-ku, Tokyo, Japan 105-0023

Or, visit Honeywell on the World Wide Web at: **http://www.honeywell.com**

Specifications are subject to change without notice.
(Note that specifications may differ slightly for transmitters manufactured before October 30, 1995.)

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Instructions

- Select the desired Key Number. The arrow to the right marks the selection available.
- Make one selection from each table, I and II, using the column below the proper arrow.

Select as many Table III options as desired (if no options or approvals are desired, specify 9X).
A (◆) denotes unrestricted availability. A letter denotes restricted availability.
Restrictions follow Table IV.

Key Number		I		II		III (Optional)		IV
_ _ _ _ _ _	-	_ _ _	-	_ _ _ _ _	-	_ _, _ _ _ _	+	XXXX

KEY NUMBER		Selection	Availabili	
Span				
Gage	0-20 to 0-500 psi/0-1.4 to 0-35 bar	STG944	↓	
Pressure	0-300 to 0-3000 psi/0-21 to 0-210 bar	STG974	↓	
Absolute	0-50 to 0-780 mmHgA/0-67 to 1040 mbar A.	STA922		↓
Pressure	0-20 to 0-500 psia/0-1.4 to 0-35 bar abs	STA940		↓

TABLE I - METER BODY

	Wetted Process Head ***	Vent/Drain Valve **	Barrier Diaphragms			
Material of Construction	Carbon Steel *	316 St. St.	316 LSS	A _ _	◆	◆
	Carbon Steel *	316 St. St.	Hastelloy C	B _ _	◆	◆
	316 St. St.	316 St. St.	316 LSS	E _ _	◆	◆
	316 St. St.	316 St. St.	Hastelloy C	F _ _	◆	◆
	Hastelloy C	Hastelloy C	Hastelloy C	J _ _	◆	◆
Fill Fluid	Silicone DC200 ****			_ 1 _	◆	◆
	CTFE			_ 2 _	◆	◆
Process Head Configuration	1/4" NPT			_ _ A	◆	
	1/2" NPT with Adapter			_ _ G	t	
	1/2" NPT			_ _ G		◆

TABLE II

No Selection	00000	◆	◆

* Carbon Steel heads are zinc-plated. Not recommended for water service due to hydrogen migrat
Use Stainless Steel heads.

** Vent/Drains are Teflon coated for lubricity.

*** The standard reference head for the STG9XX is carbon steel (zinc-plated).
See Table III for a stainless steel reference (HR) head option.

**** If STA922 operating below 50mm HgA, see Figure 2 in Specification 34-ST-03-65 and contact Marketing Applications for a "Special" Silicone DC704 quote.

Note: End vent drain valve standard for STG9XX.
End vent drain valves are not available on STA9XX.

TABLE III - OPTIONS	Selection	STA9 44	STG9 22 40	
None	00	◆	◆	
Communication Options				
HART® Protocol Compatible Electronics	HC	e	e	b
FOUNDATION Fieldbus Communications	FF	r	r	
Indicating Meter Options				
Analog Meter (0-100 Even 0-10 Square Root)	ME	◆	◆	b
Smart Meter	SM	◆	◆	
Custom Configuration of Smart Meter	CI	m	m	
Local Zero	LZ	x		b
Local Zero and Span	ZS	s		
Transmitter Housing & Electronics Options				
Lightning Protection	LP	◆	◆	
Custom Calibration and I.D. in Memory	CC	◆	◆	
Transmitter Configuration	TC	◆	◆	
Write Protection	WP	◆	◆	
316 ST.ST. Electronics Housing - *with M20 Conduit Connections*	SH	n	n	b
1/2" NPT to M20 316SS Conduit Adapter (BASEEFA EEx d IIC)	A1	n	n	
1/2" NPT to 3/4" NPT 316 SS Conduit Adapter	A2	u	u	
Stainless Steel Housing with M20 to 1/2" NPT 316 SS Conduit Adapter *(use for FM and CSA Approvals)*	A3	i	i	
Stainless Steel Customer Wired-On Tag (4 lines, 28 characters per line, customer supplied information)	TG	◆	◆	
Stainless Steel Customer Wired-On Tag (blank)	TB	◆	◆	
Low Temperature - -50°C Ambient Limit	LT	z		
End Cap Live Circuit Warning Label in Spanish (only with ATEX 3D)	SP	a	a	b
End Cap Live Circuit Warning Label in Portuguese (only with ATEX 3D)	PG	a	a	
End Cap Live Circuit Warning Label in Italian (only with ATEX 3D)	TL	a	a	
End Cap Live Circuit Warning Label in German (only with ATEX 3D)	GE	a	a	
Meter Body Options				
A286SS (NACE) Bolts and 302/304SS (NACE) Nuts for Heads	CR	◆	◆	b
316 SS Bolts and 316 SS Nuts for Process Heads	SS	f		
Adapter Flange - 1/2" NPT St. Steel	S1	c		
Adapter Flange - 1/2" NPT Hastelloy-C	T1	c		
Modified DIN Process Heads - 316SS	DN	w	v	
Viton Process Head Gaskets (teflon is standard)	VT	◆		
Side Vent/Drain	SV	d		
Blind DIN SS Flanges Mounted with NACE Bolts	B1	y		
St. St. Reference Head (Carbon Steel Standard)	HR	◆		
Transmitter Mounting Brackets Options				
Mounting Bracket - Carbon Steel	MB	◆	◆	b
Mounting Bracket - ST. ST.	SB	◆	◆	
Flat Mounting Bracket - Carbon Steel	FB	◆	◆	
Services/Certificates/Marine Type Approval Options				
Clean Transmitter for Oxygen or Chlorine Service with Certificate	0X	h	h	
Over-Pressure Leak Test with F3392 Certificate	TP	◆	◆	
Calibration Test Report and Certificate of Conformance (F3399)	F1	◆	◆	b
Certificate of Conformance (F3391)	F3	◆	◆	
Certificate of Origin (F0195)	F5	◆	◆	
FMEDA (SIL) Certificate	F6	◆	◆	
NACE Certificate (F0198)	F7	o	o	
Marine Type Approvals (DNV, ABS, BV & LR)	MT	2	2	
Warranty Options				
Additional Warranty - 1 year	W1	◆	◆	b
Additional Warranty - 2 years	W2	◆	◆	
Additional Warranty - 3 years	W3	◆	◆	
Additional Warranty - 4 years	W4	◆	◆	

Table III continued next page

TABLE III - OPTIONS (continued)

Approval Body	Approval Type	Location or Classification	Selection	STA9 STG9 44 74	STA9 STG9 22 40
No hazardous location approvals			9X	◆	◆
Factory Mutual	Explosion Proof	Class I, Div. 1, Groups A,B,C,D	1C	◆	◆
	Dust Ignition Proof	Class II, III Div. 1, Groups E,F,G			
	Non-Incendive	Class I, Div. 2, Groups A,B,C,D			
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G			
CSA	Explosion Proof	Class I, Div. 1, Groups B,C,D	2J	◆	◆
	Dust Ignition Proof	Class II, III, Div. 1, Groups E,F,G			
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G			
SA (Australia)	Intrinsically Safe	Ex ia IIC T4	4G	◆	◆
	Non-Sparking	Ex n IIC T6 (T4 with SM option)			
ATEX*	Intrinsically Saft, Zone 0/1	Ex II 1G EEx ia IIC T4, T5,T6	3S	◆	◆
	Flameproof, Zone 1	Ex II 2G EEx d IIC T5, T6, Enclosure IP 66/67	3D	◆	◆
	Non-Sparking, Zone 2	Ex II 3G EEx nA, IIC T6 (Honeywell). Enclosure IP 66/67	3N	◆	◆
	Multiple Marking** Int. Safe, Zone 0/1, or Flameproof, Zone 1, or Non-Sparking, Zone 2	Ex II 1 G EEx ia IIC T4, T5, T6 Ex II 2 G EEx d IIC T5, T6 Ex II 3 G EEx nA, IIC T6 (Honeywell) Enclosure IP 66/67	3H	◆	◆
INMETRO (Brazil)	Flameproof, Zone 1	Ex d IIC T5	6D	◆	◆

b

*See ATEX installation requirements in the ST 3000 User's Manual

**The user must determine the type of protection required for installation of the equipment. The user shall then check the box [✔] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, the equipment shall not then be reinstalled using any of the other certification types.

TABLE IV

Factory Identification	XXXX	◆	◆

RESTRICTIONS

Restriction Letter	Table	Available Only With Selection	Table	Not Available With Selection
a	III	3D or 3H		
b	Select only one option from this group			
c	I	_ _ G		
d			III	DN, B1
e			III	4G
f			III	2J
h	I	_ 2 _		
i	III	1C or 2J		
m	III	SM		
n			III	1C, 2J
o	III	CR or B1		
r			III	TC, ME, 4G, 3S
s			III	FF, ME
t		Select adapter from Table III S1, T1		
u	III	1C, 2J		
v	I	E _ G, F _ G		
w	I	E _ A, F _ A	III	SV
x	III	FF, SM		
y	I III	E _ A, F _ A DN	III	SV
z			III	STG974
2			III	FB

Note: See ST-83 for Published Specials with pricing.
See ST-89 and User's Manual for part numbers.
See ST-OE-9 for OMS Order Entry Information including TC, manuals, certificates, drawings and SPINS.
See ST-OD-1 for tagging, ID, Transmitter Configuration (TC) and calibration including factory default values.
To request a quotation for a non-published "special", fax RFQ to Marketing Applications.
See ST-OE-9 for OMS Order Entry Information including TC, manuals,

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Instructions

- Select the desired Key Number. The arrow to the right marks the selection available.
- Make one selection from each table, I and II, using the column below the proper arrow.

Select as many Table III options as desired (if no options or approvals are desired, specify 9X).
A (◆) denotes unrestricted availability. A letter denotes restricted availability.
Restrictions follow Table IV.

Key Number		I		II		III (Optional)		IV
_ _ _ _ _ _	-	_ _ _	-	_ _ _ _ _	-	_ _, _ _ _ _	+	XXXX

KEY NUMBER

	Span	Selection	Availability
Gage Pressure	0-20 to 0-500 psi/0-1.4 to 0-35 bar	STG94L	↓
	0-300 to 0-3000 psi/0-21 to 0-210 bar	STG97L	↓
	0-500 to 0-6000 psi/0-35 to 0-415 bar	STG98L	↓
	0-500 to 0-10000 psi/0-35 to 0-690 bar	STG99L	↓

TABLE I - METER BODY

	Wetted Process Heads	Vent/Drain Valves **	Barrier Diaphragms		
Material of Construction	316 St. St.	--	316 LSS	E _ _	◆
	316 St. St.	--	Hastelloy C	F _ _	◆
Fill Fluid	Silicone			_ 1 _	◆
	CTFE			_ 2 _	◆
Process Head Configuration	1/2" NPT (female)			_ _ G	◆

TABLE II

No Selection	00000	◆

** Vent/Drains are Teflon coated for lubricity.

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Availability
STG9 _ L

TABLE III - OPTIONS	**Selection**	**4 7 8**	
None	00	◆	
Communication Options			
HART® Protocol Compatible Electronics	HC	y	b
FOUNDATION Fieldbus Communications	FF	r	
Indicating Meter Options			
Analog Meter (0-100 Even 0-10 Square Root)	ME	◆	b
Smart Meter	SM	◆	
Custom Configuration of Smart Meter	CI	m	
Local Zero	LZ	x	b
Local Zero and Span	ZS	s	
Transmitter Housing & Electronics Options			
Lightning Protection	LP	◆	
Custom Calibration and I.D. in Memory	CC	◆	
Transmitter Configuration	TC	◆	
Write Protection	WP	◆	
316 ST.ST. Electronics Housing - *with M20 Conduit Connections*	SH	n	b
1/2" NPT to M20 316SS Conduit Adapter (BASEEFA EEx d IIC)	A1	n	
1/2" NPT to 3/4" NPT 316 SS Conduit Adapter	A2	u	
Stainless Steel Housing with M20 to 1/2" NPT 316 SS Conduit Adapter *(use for FM and CSA Approvals)*	A3	i	
Stainless Steel Customer Wired-On Tag (4 lines, 28 characters per line, customer supplied information)	TG	◆	
Stainless Steel Customer Wired-On Tag (blank)	TB	◆	
Low Temperature - -50°C Ambient Limit	LT	◆	
End Cap Live Circuit Warning Label in Spanish (only with ATEX 3D)	SP	a	
End Cap Live Circuit Warning Label in Portuguese (only with ATEX 3D)	PG	a	
End Cap Live Circuit Warning Label in Italian (only with ATEX 3D)	TL	a	
End Cap Live Circuit Warning Label in German (only with ATEX 3D)	GE	a	
Transmitter Mounting Brackets Options			
Mounting Bracket - Carbon Steel	MB	◆	
Mounting Bracket - ST. ST.	SB	◆	
Flat Mounting Bracket - Carbon Steel	FB	◆	
Services/Certificates/Marine Type Approval Options			
Clean Transmitter for Oxygen or Chlorine Service with Certificate	0X	h	
Over-Pressure Leak Test with F3392 Certificate	TP	◆	
Calibration Test Report and Certificate of Conformance (F3399)	F1	◆	b
Certificate of Conformance (F3391)	F3	◆	
Certificate of Origin (F0195)	F5	◆	
FMEDA (SIL) Certificate	F6	◆	
NACE Certificate (F0198)	F7	◆	
Marine Type Approvals (DNV, ABS, BV & LR)	MT	2	
Warranty Options			
Additional Warranty - 1 year	W1	◆	b
Additional Warranty - 2 years	W2	◆	
Additional Warranty - 3 years	W3	◆	
Additional Warranty - 4 years	W4	◆	

Table III continued next page

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Availability
STG9 _ L

TABLE III - OPTIONS (continued)

Approval Body	Approval Type	Location or Classification	Selection	4 7 8
No hazardous location approvals			9X	◆
Factory Mutual	Explosion Proof	Class I, Div. 1, Groups A,B,C,D	1C	◆
	Dust Ignition Proof	Class II, III Div. 1, Groups E,F,G		
	Non-Incendive	Class I, Div. 2, Groups A,B,C,D		
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G		
CSA	Explosion Proof	Class I, Div. 1, Groups B,C,D	2J	◆
	Dust Ignition Proof	Class II, III, Div. 1, Groups E,F,G		
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G		
SA (Australia)	Intrinsically Safe	Ex ia IIC T4	4G	◆
	Non-Sparking	Ex n IIC T6 (T4 with SM option)		
ATEX*	Intrinsically Safe, Zone 0/1	Ex II 1G EEx ia IIC T4, T5,T6	3S	◆
	Flameproof, Zone 1	Ex II 2G EEx d IIC T5, T6, Enclosure IP 66/67	3D	◆
	Non-Sparking, Zone 2	Ex II 3G EEx nA, IIC T6 (Honeywell). Enclosure IP 66/67	3N	◆
	Multiple Marking** Int. Safe, Zone 0/1, or Flameproof, Zone 1, or Non-Sparking, Zone 2	Ex II 1 G EEx ia IIC T4, T5, T6 Ex II 2 G EEx d IIC T5, T6 Ex II 3 G EEx nA, IIC T6 (Honeywell) Enclosure IP 66/67	3H	◆
INMETRO (Brazil)	Flameproof, Zone 1	Ex d IIC T5	6D	◆

*See ATEX installation requirements in the ST 3000 User's Manual

**The user must determine the type of protection required for installation of the equipment. The user shall then check the box [✔] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been check

TABLE IV

Factory Identification	XXXX	◆

RESTRICTIONS

Restriction		Available Only With		Not Available With
Letter	**Table**	**Selection**	**Table**	**Selection**
a	III	3D or 3H		
b		Select only one option from this group		
h	I	_ 2 _		
i	III	1C or 2J		
m	III	SM		
n			III	1C, 2J
r			III	TC, ME, 4G, 3S
s			III	FF, ME
u	III	F1D3, C1C3, 1C, 2J		
x	III	FF, SM		
y			III	4G
2			III	FB

Note: See ST-83 for Published Specials with pricing.
See ST-89 and User's Manual for part numbers.
See ST-OE-9 for OMS Order Entry Information including TC, manuals, certificates, drawings and SPINS.
See ST-OD-1 for tagging, ID, Transmitter Configuration (TC) and calibration including factory default values.
To request a quotation for a non-published "special", fax RFQ to Marketing Applications.

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